AMENDMENT
S/N 10/757,829
GROUP ART 3729

REMARKS

Reconsideration is requested in view of the above amendments and the following remarks. Claim 13 has been revised. Support for claim 13 can be found at page 4, lines 3-24 of the present specification, among other places. Editorial revisions have been made in claims 13, 19 and 20. New claims 21 and 22 have been added. Support for new claims can be found at page 11, lines 25-26, page 15, lines 8-11 of the present specification, among other places. Claims 13, 17, 19 and 20-22 are pending in the application.

Claim Rejections – 35 USC § 102

Claims 13, 17, 19 and 20 are rejected under 35 USC 102(b) as being anticipated by Brennan (US 2,762,724). Applicants respectfully traverse this rejection.

Claim 13 requires filling voids of a porous member with a fluid filling material to create a first layer. Claim 13 further requires the use of a porous member and filling material that provide an acoustic matching member having a low sound velocity to reduce sound reflections when sound travels between a vibration device and an emission medium.

The use of the porous member and filling material that provide an acoustic matching member having a low sound velocity is advantageous in that it helps reduce sound reflections when sound travels between a vibration device and an emission medium. The acoustic matching member can be used for, e.g., an acoustic matching layer of an ultrasonic sensor or an ultrasonic transducer of an ultrasonic flowmeter (see, e.g., page 1, lines 7-10 of the present specification). An ultrasonic transducer or sensor is used for transmitting the ultrasonic waves generated by the transducer to an emission medium, for example, gas, or receiving the ultrasonic waves that have propagated through the emission medium (see page 3, lines 12-18 of the present specification). The transducer or sensor has a vibration device whose acoustic impedance is much higher than the gas. As a result, considerable reflection occurs at the transducer-gas interface, and thus the strength of the acoustic waves passing through the interface becomes weak (see page 4, lines 3-19 of the present specification). The acoustic matching layer having a small density and a low sound velocity, e.g., a sintered porous member of ceramic or a mixture of a ceramic and a glass helps reduce the sound reflections at the transducer-gas interface (see page 11, lines 25-26 of the present specification). This allows the vibrations of the vibration device of the transducer to

propagate effectively through the gas, and improves the strength of the acoustic waves that pass through the transducer-gas interface (see page 4, lines 12-24 of the present specification).

Brennan fails to disclose or teach obtaining an acoustic matching member, wherein the acoustic matching member is made of materials having a low sound velocity to reduce sound reflections when sound travels between a vibration device and an emission medium, as required by claim 13. Instead, Brennan discusses a method of impregnating and coating a porous metal strips with insulation materials (see Brennan, col. 1, lines 15-20). The purpose of Brennan is to provide an insulated conductor having a layer of insulation materials bonded on its surface (see Brennan, col. 1, lines 47-49). Brennan is completely silent as to the acoustic matching member as required by claim 13.

Moreover, Brennan pays no attention to manufacturing the acoustic matching member with materials having a low sound velocity, as required by claim 13. On the contrary, Brennan uses metal materials as a conductive base material (see, e.g., Brennan, col. 1, lines 32-36, col. 4, line 40-41, and col. 5, lines 57-58), which have a high sound velocity. The focus of Brennan is to bond the insulation materials to the surface of the metal strip so as to prevent electric current leakage. It does not require a low sound velocity to reduce the sound reflections at the interface between the vibration device and the sound emission medium as required by claim 13.

In addition, the purpose of Brennan of impregnating and coating a porous metal strip with insulation materials is merely to create a strong bond between the metal strip and the insulation materials, and thus to prevent current leakage. The thickness of the layers deposited on the metal strip is not critical as long as the complete surface of the strip is covered by the insulation materials (see Brennan, col. 5, line 74 to col. 6, line 2). On the other hand, the present method not only helps bond the second layer on the first layer, but also helps fill the porous member with the fluid filling so that the fluid filling becomes an integral component of the first layer.

For at least this reason, the invention of claim 13 is patentable over Brennan. Claims 17 depends from claim 13 and is patentable along with claim 13 and need not be separately distinguished at this time. Applicants are not conceding the relevance of the rejection to the remaining features of the rejected claims.

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Claim Rejections – 35 USC § 103

Claims 19 and 20 are rejected under 35 USC 103(a) as being unpatentable over Brennan in view of Tone et al. (US 4,523,122). Applicants respectfully traverse this rejection. Claims 19 and 20 depend from claim 13 and are patentable over Brennan in view of Tone et al. for at least the same reasons discussed above regarding claims 13 and 17. In addition, the rejection cites Tone et al. as suggesting the use of Brennan method of impregnating and coating a porous metal strip with insulation materials. Applicants respectfully submit that it would not be obvious for one skilled in the art to combine the references. Brennan discusses a method of manufacturing an insulated conductor, while Tone et al. discuss manufacturing an acoustic impedance-matching layer. They belong to completely distinct areas.

In view of the above, favorable reconsideration in the form of a notice of allowance is respectfully requested. Any questions regarding this communication can be directed to the undersigned attorney, Douglas P. Mueller, Reg. No. 30,300, at (612) 455-3804.

Respectfully Submitted,

Dated: September 27, 2007

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